

- Appl. No. 09/718,500  
Amdt. Dated Apr. 7, 2004  
Reply to Office action of October 8, 2003

## REMARKS

Claims 32-45 stand rejected in this application. Claims 32 and 39-41 have been amended to better clarify the Applicants' invention. Claims 34, 35 and 43 have been deleted. Accordingly, claims 32-33, 36-42, 44 and 45 now remain pending in this application, and the Applicants respectfully submit that each of these claims is in condition for allowance.

The claims have been amended in order to overcome the Examiner's rejection under §112, second paragraph. Specifically, independent claims 32 has been amended to better describe the method of calculating the call and put values and what functions they are of the subsets selected, as suggested in the office action. More specifically, these claims now explicitly clarify that each unrealized gain of said first subset is the absolute difference between a mark-to-future value and a benchmark value when said mark-to-future value exceeds said benchmark value, and each unrealized loss of said first subset is the absolute difference between a mark-to-future value and a benchmark value when said benchmark value exceeds said mark-to-future value. The amended claims further clarify that each of said future scenarios is associated with a probability of future occurrence, and said call and put values are the expected values of said first and second subsets respectively as previously presented in claim 34. Claims 39-41 have also been similarly amended. Independent claim 32 has also been amended to explicitly recite a linear program to be solved in determining the efficient portfolio as previously presented in claim 35, in response to the Examiner's rejection.

In response to the Examiner's suggestion to incorporate the discussion of the method of selecting the optimal portfolio from the efficient frontier that maximizes the utility function, it is respectfully submitted that the explicitly claimed steps of providing a utility function and selecting an optimal portfolio from at least one efficient portfolio (determined in step (a)) that maximizes said utility

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function sufficiently describes this particular aspect of the claimed combination to persons skilled in the art. The methodology involved in selecting an optimal portfolio from an efficient frontier that maximizes a utility function is well-known in the art, and is within the knowledge of persons of ordinary skill in the art.

Claims 32-45 stand rejected under 35 U.S.C. 103(a) based on U.S. Patent No. 6,393,409 issued to Young et al., in view of U.S. Patent No. 6,336,103 issued to Baker, and further in view of U.S. Patent No. 6,078,904 issued to Rebane.

First, it is noted that the systems described in the cited references do share some similarities in that they relate to systems for constructing a portfolio that is “optimal” according to some measure. The Applicants acknowledge that the Applicants’ invention performs certain tasks that are similar when described generally; a portfolio is optimized relative to a benchmark, an efficient frontier is produced and a particular efficient portfolio is selected on the basis of an investor’s utility function. At this general level of detail, however, it is respectfully submitted that such concepts are old and well-known in optimization and utility theory.

However, the Applicants’ claimed invention utilizes novel measures that are used to compare a portfolio to a benchmark. More specifically, while Baker trades off the standard deviation of return differences with expected return, for example, the Applicants trade off expected upside of a portfolio (portfolio outperforms the benchmark) with expected downside of a portfolio (portfolio underperforms the benchmark) in constructing an optimal portfolio. The former is referred to as “Call value” and the latter is referred to as “Put value” because their payoff profiles correspond to those of call and put options, respectively. These novel measures utilized by the Applicants’ invention are explicitly claimed in claims 32, and 39-41. The Applicants’ disclosure and claims provide various

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applications in which such novel measures are utilized, for example, in which a linear program for finding optimal portfolios based on these novel measures is provided, a utility function for selecting among portfolios that are efficient with respect to these novel measures is identified, and a technique relating to how duality theory can be used to "price" various assets (e.g., securities or insurance) based on the solution to the linear program is shown.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be some reasonable expectation of success. Finally, the prior art references must teach or suggest all the claimed limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not in Applicants' disclosure. In this case, the cited references fails to teach or suggest all the claimed limitations. More specifically, none of Young, Baker and Rebane teach the calculating of a first subset of unrealized gains representing a portfolio's upside and where the unrealized gains match payoffs of a call option, the calculating of a second subset of unrealized losses representing a portfolio's downside and where the unrealized losses match payoffs of a put option, and calculating a call value and a put value for a portfolio, where the call and put values are the expected values of the first and second subsets respectively. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is in order and respectfully requested.

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**Conclusion**

For the foregoing reasons, in view of the amendments in the claims, Applicants respectfully submit that each of claims 32-33, 36-42, 44 and 45 which remain pending in this application, are now in form for allowance. A Notice of Allowance is respectfully requested. However, if the Examiner deems that any issue remains after considering this response, he is invited to call the undersigned to expedite the prosecution and work out any such issue by telephone.

Respectfully submitted,

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